

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte DAVID M. FORMAN, DAVID T. JENNINGS III  
and GIMTONG TEOWEE

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Appeal No. 2006-1482  
Application No. 10/619,890

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ON BRIEF

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Before CRAWFORD, LEVY, and NAPPI, Administrative Patent Judges.  
LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1, 3-5, 7 and 10-15.

We AFFIRM-IN-PART.

BACKGROUND

The appellants' invention relates to firing-readiness diagnostics of a pyrotechnic device such as an electronic detonator (specification, page 1).

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Claim 1 is representative of the invention, and is reproduced as follows:

1. An electronic detonator for use in mining or blasting and having firing-readiness diagnostics, comprising an igniter and electronic circuitry configured and/or programmed to perform one or more firing-readiness diagnostics on said electronic detonator.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Definition of "Detonator", 3/4/2001, HYDRO CUT, Terminology and Resource Information, available online @ <http://www.hydrocut.com/Terms/D.html> and <http://web.archive.org/web/20010304121751/http://hydrocut.com/Terms/D.html>

Definition of "Initiator", 3/4/2001, HYDRO CUT, Terminology and Resource Information, available online @ <http://www.hydrocut.comserms/Terms/1.html> and <http://web.archive.org/web/20010304121751/http://hydrocut.com/Terms/1.html>

"Miniature Electric Initiator", L3 Communications, KDI Precision Products, Inc. 10 April 2003 available online @ <http://www.dtic.mil/ndia/2003fuze/schmidt.pdf>

EXPLODING BRIDGEWIRES, Technical Discussion, Exploding Bridgewire (EBW) Detonators, Risi, copyright @ 2000 - [www.risi-usa.com](http://www.risi-usa.com), available online @ <http://www.risi-usa.com/0products/8td/page03.html> and <http://web.archive.org/web/20010418201121/http://risi-usa.com/0products/8td/page03.html>

CONTINUITY TESTS, 12/10/2000, Integrated Publishing, available online @ <http://www.tpub.com/neets/book16/68h.htm> and <http://web.archive.org/web/20001210064800/http://www.tpub.com/neets/book16/68h.htm>

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Definition of "data integrity", Microsoft Computer Dictionary  
Fourth Edition, Microsoft Press, copyright © 1999, Microsoft  
Corporation

Claims 1, 3-5, 7 and 10-15 stand rejected under 35 U.S.C.  
§ 102(b) as being anticipated by Adams.

Rather than reiterate the conflicting viewpoints advanced  
by the examiner and the appellants regarding the above-noted  
rejection, we make reference to the answer (mailed March 15,  
2005) for the examiner's complete reasoning in support of the  
rejection, and to the brief (filed February 9, 2005) for the  
appellants' arguments thereagainst.

Only those arguments actually made by appellants have been  
considered in this decision. Arguments which appellants could  
have made but chose not to make in the brief have not been  
considered. See 37 CFR § 41.37(c)(1)(vii)(eff. Sept. 13, 2004).

#### OPINION

In reaching our decision in this appeal, we have carefully  
considered the subject matter on appeal, the rejection advanced  
by the examiner, and the evidence of anticipation relied upon by  
the examiner as support for the rejection. We have, likewise,  
reviewed and taken into consideration, in reaching our decision,  
appellants' arguments set forth in the brief along with the

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examiner's rationale in support of the rejection and arguments in rebuttal set forth in the examiner's answer.

Upon consideration of the record before us, we make the determinations which follow. We begin with claim 1.

Appellants' position (brief, page 4) is that Adams is directed to an igniter for use in gas generators in vehicle safety program. It is asserted (id.) that a detonator detonates an explosive, while an igniter for a gas generator is not intended to detonate an explosive, but rather to trigger the burning, not detonation, of a gas generant such as is used to inflate an airbag. Appellants acknowledge (brief, pages 5 and 6) that Adams discloses "[i]t would also be advantageous to have similar capabilities for selectively [i.e., simultaneously or sequentially depending upon selected variables] igniting various units of reactive materials, such as explosives, in mining or demolition operations," (col. 1, lines 23-26). However, appellants submit that Adams does not adequately disclose the claimed electronic detonator having firing-readiness diagnostics, because "one of ordinary skill in the art could [not] have combined [Adams'] description ... with his own knowledge to make the claimed invention." Appellants add (id.) that the quoted passage of Adams is nothing more than a general, tangential, and

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non-enabling background comment that has nothing to do with the rest of the patent's disclosure. Further, appellants discuss the Tirmizi Declaration (brief, pages 7 and 8).

From our review of Adams, we find, for the reasons which follow, that Adams anticipates the language of claim 1, as advanced by the examiner. We begin with claim construction. Analysis of whether a claim is patentable over the prior art begins with a determination of the scope of the claim. The properly interpreted claim must then be compared with the prior art. Claim interpretation must begin with the language of the claim itself. See Smithkline Diagnostics, Inc. v. Helena Laboratories Corp., 859 F.2d 878, 882, 8 USPQ2d 1468, 1472 (Fed. Cir. 1988). Accordingly, we will initially direct our attention to appellants' claim 1 to derive an understanding of the scope and content thereof.

We find that the claim language "for use in mining or blasting" to be a statement of intended use. Review of the entire claim reveals that the body of the claim does not rely upon the language of the preamble for completeness. Rather, the structural limitations are able to stand alone. Moreover, the recitation of intended use does not result in a structural difference between the claimed invention and the prior art.

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From all of the above, we have not given patentable weight to the language "for use in mining or blasting" as recited in the preamble of claim 1. In any event, even if we were to give patentable weight to the preamble, we find that the language of the preamble is met by Adams. The reference discloses (col. 1, lines 23-26) that "it would also be advantageous to have similar capabilities for selectively igniting various units of reactive materials, such as explosives, in mining or demolition operations." From the disclosure of igniting explosives in mining or demolition operations, we agree with the examiner (answer, page 7) that Adams is useful in mining or blasting.

We are not persuaded by appellants' assertion (brief, page 4) that Adams does not disclose a detonator because a detonator detonates an explosive, whereas an igniter for a gas generator [as in Adams] triggers burning, not detonation of the gas generant used to inflate an airbag. As noted by the examiner (answer, page 7), from Adams' disclosure (col. 1, lines 23-26) of igniting reactive materials, such as explosives, we find that the igniter of Adams is also a detonator, as it ignites (or detonates) reactive materials, causing them to explode. In addition, we find from Webster's Collegiate Dictionary, 10<sup>th</sup> Ed., ©1996 that "detonator" is defined as "a device or small quantity

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of explosives used for detonating a high explosive.<sup>1</sup>" Because the igniter of Adams is a small device that can be used for igniting explosives in a mining operation, we find that Adams meets the definition of a detonator.

In addition, we note that in an inflator for an airbag, an electric current is sent to the detonator, which ignites the reactive material.<sup>2</sup> From the disclosure that the igniter for an airbag is a detonator, we find that the claim language of a detonator is met by the airbag inflator of Adams. Accordingly, we are not persuaded by appellants' assertion (brief, page 5) that the rejection does not address the clear structural and functional differences between a detonator and the ignitor disclosed by Adams. We add that from the Dictionary definition and Web article to LemurZone, taken with the disclosure of Adams, we find that Adams is capable of dual utility as both an igniter and as a detonator, and that the igniter of Adams acts as a detonator to ignite the reactive gases (as per the LemurZone article).

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<sup>1</sup>A copy of the pertinent page(s) of the Dictionary are attached to our Decision.

<sup>2</sup> See the attached document "Inflators in Airbags - Supplemental Restraint Systems - The LemurZone Airbag pages," as the Web page existed on June 11, 2000. A copy of the Web page is attached to our Decision.

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Nor are we persuaded by appellants' assertion (brief, page 6) that Adams does not disclose the claimed electronic detonator having firing-readiness diagnostics. Adams discloses (col. 4, lines 64-66) that the controller 59 is an application specific integrated circuit (ASIC) that provides, inter alia, diagnostic functions for the igniter. Adams additionally discloses (col. 4, lines 24-28) that "[t]he controller has diagnostic means for comparing igniter controller integrity data, energy storage capacity data, and firing loop (heating means activation circuitry) integrity data to predetermined limits and generating fault warning messages and integrity status messages to the ECU." From these disclosures of Adams, we find that Adams discloses firing-readiness diagnostics.

Nor are we persuaded by appellants' assertion (brief, page 6) that col. 1, lines 23-26 of Adams is nothing more than a general, tangential, and non-enabling background comment that has nothing to do with the rest of the patent's disclosure. If appellants want to assert the non-enablement of the cited portion of the reference, appellants should provide evidence that the disclosure would have required undue experimentation by an artisan in order to make and use the invention. From our review of the record, we find no convincing evidence that an artisan



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would not be aware how to use the ignitor of Adams for igniting reactive materials such as explosives in a mine.

Nor are we persuaded by appellants' assertion (brief, page 7) that "the incorporation of a hermetically-sealed automotive-style igniter into a detonator a key advance that permits the claimed firing-readiness diagnostics to be implemented - was not within the ordinary skill in the art at the time." The automobile ignitor of Adams is sealed and coated to provide an environmental seal (col. 6, lines 40-49), has firing-readiness diagnostics, and the reference discloses being capable of being used as a detonator for explosives in mines. From this disclosure and the disclosure of the LemurZone article that the automobile airbag igniter is a detonator, we find that the incorporation of a hermetically-sealed automotive-style igniter into a detonator was within the level of skill of an artisan at the time of appellants' invention.

Turning to the Tirmizi Declaration, appellants acknowledge that (brief, page 8) that the Declaration was made in the context of an obviousness determination in another application. Appellants assert that the Declaration supports appellants' contention that there is no adequate or inherent disclosure in

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Adams of a detonator for use in mining and blasting having firing-readiness diagnostics features as claimed.

From our review of the Declaration, we agree with the examiner (answer, page 12) that the:

declaration is not related to the instant application or the Adams Patent. The May 29, 2002 declaration under 37 CFR 1.132 filed 22 April 2004 is insufficient to overcome the rejection of claims 1, 3-5, 7 and 10-15 based upon Adams as set forth above because: it refers only to the system described in the application referenced by the declaration and not to the individual claims of the instant application.

We add that the Declaration's averments regarding the Marshall and Bailey patents are not relevant because these references are not applied against the claims. Of note is that the Adams reference is not referred to in the Declaration. In addition, the assertions regarding the applied prior art being non-analogous, and lack of suggestion or motivation, are not relevant as the rejection is under 35 U.S.C. § 102(b). Although the Declaration does refer (page 2) to an automotive igniter needing a smaller diameter to fit within a standard detonator shell, we note that it is not necessary to bodily combine references. In addition, there is nothing in the Declaration as to the size of a "standard detonator shell." Nor does the Declaration address the

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disclosure in Adams of igniting reactive materials such as explosives in mines. Accordingly, the Declaration has been given little weight.

We additionally note that the examiner has relied upon five additional documents obtained from the Internet, along with a dictionary definition (answer, pages 3, 4 and 9-11) to support the examiner's interpretation of the claim language. Appellants could have filed a reply brief to rebut the examiner's assertions but have not done so. However, because the LemurZone article is more relevant to the additional documents relied upon by the examiner, we find them to be cumulative to Adams.

From all of the above, we find that Adams anticipates the language of claim 1, for the reasons advanced by the examiner, as amplified by our comments. The rejection of claim 1 under 35 U.S.C. § 102(b) is affirmed.

We turn next to independent claim 12. As claim 12 was argued together with claim 1, we affirm the rejection of claim 12 for the same reasons.

We turn next to claims 3-5. As these claims have been argued as a group by appellant, we select claim 3 as representative of the group. Turning to claim 3, the claim requires that the igniter includes an ignition element and that

the electronic circuitry comprises a continuity check module. Appellants' position (answer, page 10) is that Adams does not inherently disclose the continuity check module, as asserted by the examiner. The examiner responds (answer, page 16) that although Adams does not specifically disclose a continuity check module, Adams must be disclosing a continuity check module within the diagnostic means because if current does not go through the bridgewire, then the continuity must be bad. The examiner additionally argues (answer, page 17) to the effect that it is well known in the art to use current to verify continuity and (answer, page 16) that Adams does disclose a diagnostic current.

From our review of Adams, we find that the reference discloses (col. 4, lines 14-16) that "another resistor 60 sets up a diagnostic current for a controller 59, which is located on the opposite side of the circuit board." Adams additionally discloses (col. 5, lines 24-32) that "the controller has diagnostic means for comparing igniter controller integrity data, energy storage capacity data, and firing loop (heating means activation circuitry) integrity data to predetermined limits and generating fault warning messages and integrity status messages to the ECU." From the disclosure of what items the diagnostic

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means checks, we find no disclosure of a continuity check. Although the examiner is correct that resistor 60 sets up a diagnostic current for controller 59, which performs the diagnostic checks, we find no evidence that Adams necessarily includes a continuity check. Inherency cannot be established by possibilities or probabilities, but must necessarily flow from the operation of the device. Because the examiner has not established that Adams necessarily includes a continuity check module, we find that the examiner has failed to establish a prima facie case of anticipation of claim 3. Accordingly, the rejection of claims 3-5 under 35 U.S.C. § 102(b) is reversed.

We turn next to claims 7 and 15. Because these claims have been argued together by appellants, we select claim 7 as representative of the group. Turning to claim 7, the claim recites that the circuitry verifies that the firing capacitor has a capacitance above a first value and below a second value.

The examiner's position (answer, page 5) is that this feature is inherent in Adams. Appellants assert (brief, page 12) that there is no clear express disclosure of a capacitance check. appellants add (id.) that to the extent that the claim language is construed under 35 U.S.C. § 112, sixth paragraph, Adams does

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not disclose inherently or otherwise such a means for effecting a capacitance check or equivalent structure.

The examiner responds (answer, pages 18 and 19) that:

a. Adams clearly discloses in column 5 lines 24-32 and 58-65 that the controller has diagnostic means for comparing energy storage capacity data to predetermined limits and that controlling the activation of the igniter includes storing energy on an energy storage capacitor from a power supply by charging the energy storage capacitor and comparing energy storage capacity data to predetermined limits. Surely a capacitance check must be performed because the amount of energy a capacitor is capable of storing is directly related to its capacitance.

b. As explained in section (b)2 above, Adams resistor (60) sets up a diagnostic current with about a 75K ohm resistor (with a 1% variation). Adams further discloses the approximate predetermined value of the capacitor in column 4 lines 59-63 as "the exemplary...energy storage device...capacitance value of about 2.2 micro-farads."

c. With the given capacitance value and a diagnostic current, the diagnostic means must be performing a capacitance check as indicated by the phrase "energy storage capacity data" which would have an upper and a lower limit in order to determine its integrity and the minimum and maximum amounts of energy that may be stored.

We agree. From the disclosure of Adams of storing energy on an energy storage capacitor by charging the capacitor, comparing energy storage capacity data to predetermined limits, and coupling the energy stored on the capacitor to the heating member device, we agree with the examiner, for the reasons set forth in

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the answer (pages 18 and 19), that Adams discloses verifying that the firing capacitor has a capacitance above a first value and below a second value. From all of the above, we are not convinced of any error on the part of the examiner and find that Adams anticipates claim 7. The rejection of claim 7 under 35 U.S.C. § 102(b) is affirmed. As claim 15 falls with claim 7, the rejection of claim 15 under 35 U.S.C. § 102(b) is affirmed. Claims 10, 11, 13 and 14 have not been separately argued by appellants that therefore fall with claims 7 and 12, from which they depend. The rejection of claims 10, 11, 13 and 14 under 35 U.S.C. § 10(b) is affirmed.

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## CONCLUSION

To summarize, the decision of the examiner to reject claims 1, 7 and 10-15 under 35 U.S.C. § 102 is affirmed. The decision of the examiner to reject claims 3-5 under 35 U.S.C. § 102(b) is reversed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

MURRIEL E. CRAWFORD  
Administrative Patent Judge

STUART S. LEVY  
Administrative Patent Judge

~~ROBERT E. NAPPI~~  
Administrative Patent Judge

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